

## **ABSTRACT**

1        This invention provides a measurement-while-drilling (MWD) downhole  
2        assembly for use in drilling boreholes which utilizes directional formation evaluation  
3        devices on a rotating assembly in conjunction with toolface orientation sensors. The data  
4        from the toolface orientation sensors are analyzed by a processor and toolface angle  
5        measurements are determined at defined intervals. Formation evaluation sensors operate  
6        substantially independently of the toolface orientation sensors and measurements of the  
7        formation evaluation sensors are analyzed in combination with the determined toolface  
8        angle to obtain formation parameters.